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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,148	10/10/2003	Andrew J. Cobley	50799-2 DIV	2314
21874	7590	02/17/2006	EXAMINER	
EDWARDS & ANGELL, LLP			WILKINS III, HARRY D	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	

1742

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/684,148		COBLEY ET AL.	
	Examiner		Art Unit	
	Harry D. Wilkins, III		1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-58 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 44-58 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 57 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Regarding claim 57, the phrase "and the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "and the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 44-52 and 57-58 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Eckles (US 4,384,930) as evidenced by Fletcher et al (US 4,168,214).

Eckles anticipates the invention as claimed. Eckles teaches (see abstract, col. 1, lines 8-20, col. 5, lines 7-63 and col. 13, line 46 to col. 14, line 17) an apparatus, a Hull cell, for electroplating wherein the cell is filled with a metal plating bath including a copper salt and an aldehyde, such as benzaldehyde.

Eckles fail to expressly teach that the Hull cell included an insoluble anode and a cathode. Fletcher et al further describe the structure of a Hull cell (see col. 8, lines 50-55) included a cathode substrate to be coated and an insoluble anode. Thus, the Hull cell of Eckles would have been considered to include an insoluble anode and a cathodic substrate to be electroplated. In order for the electric circuit to be completed, both the anode and cathode would have been in contact with the electrolyte.

Regarding claims 45-48, Eckles specifically recite benzaldehyde.

Regarding claim 49, Eckles teaches (see col. 5, lines 26-29) using 1-25 g/L of aldehyde.

Regarding claim 50, Eckles teaches (see col. 3) that the metal plating bath further included a levelers and wetting agents.

Regarding claim 51, Eckles teaches (see col. 14, acidic pHs ranging from as low as 1.5 to as high as 5.5).

Regarding claim 52, the copper salt used by Eckles was (see Example 15) copper sulfate.

Regarding claim 57, since this claims recites a broad list of possible substrates to be plated, and includes the recitation "and the like", it can only be assumed that the intended coverage of this claim includes any substrate capable of being electroplated, which would include the substrate of Eckles.

Regarding claim 58, Eckles teaches (see col. 13, using a current density of 0.2-20 A/dm² (1.858-185.8 A/ft²).

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eckles (US 4,384,930).

The teachings of Eckles are described above.

Eckles do not expressly define what substrate is coated by the electroplating process.

However, it would have been obvious to one of ordinary skill in the art to have used the copper electroplating bath to coat any conventional substrate to which copper electroplating had been subjected, such as a wiring board, integrated circuit, silicon wafer, semiconductor, solder bump or decorative articles.

9. Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckles (US 4,384,930) in view of Arcilesi (US 4,137,133).

The teachings of Eckles are described above.

Eckles do not expressly teach using a substituted aldehyde as claimed.

Arcilesi teach (see abstract and cols. 5-7) benzaldehyde brighteners included in an acidic zinc electroplating bath that also included substituted benzaldehydes including various substitute groups of -OH, -Cl, -COOH, -NO₂, -SO₃, etc.

Therefore, it would have been obvious to one of ordinary skill in the art to have used substituted benzaldehydes as taught by Arcilesi for the benzaldehyde of Eckles because the substituted benzaldehydes provided varying degrees of beneficial properties of electroplating depending upon the conditions of the electroplating. One of ordinary skill in the art would have had a reasonable expectation of success of applying the brighteners described as useful for zinc electroplating by Arcilesi with a copper electroplating bath of Eckles because Eckles describe the aromatic aldehydes as being applicable to any number of metals to be electroplated, such as copper, tin, lead or zinc.

10. Claims 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckles (US 4,384,930) in view of Fletcher et al (US 4,168,214).

The teachings of Eckles are described above.

Eckles fails to teach the composition of the anode used in the Hull cell.

Fletcher et al (see col. 8) teach using platinized tantalum insoluble anodes in an electroplating cell.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional insoluble anodes of Fletcher et al for the electroplating apparatus

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of Eckles because the insoluble anodes provided high electrocatalytic activity (platinum) while avoiding the problems associated with consumable anodes changing shape.

11. Claims 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckles (US 4,384,930) in view of deWitt (US 3,646,446).

The teachings of Eckles are described above.

Eckles fails to teach the composition of the anode used in the Hull cell.

DeWitt teaches (see abstract, cols. 1 and 2) using a titanium base dimensionally stable anode containing a coating of calcium, strontium or barium combined with ruthenium.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional insoluble anode of deWitt for the electroplating apparatus of Eckles because the insoluble anode provided high electrocatalytic activity (ruthenium) while avoiding the problems associated with consumable anodes changing shape.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Examiner
Art Unit 1742

hdw